# Recognizing Laminated Root Rot in Freshly-Cut Douglas-Fir Stumps

Laminated root rot, caused by Phellinus weirii, is a common root disease of Douglas-fir. Other conifer species, such as grand fir, white fir, Pacific silver fir, larch, and hemlock may also be infected and have similar patterns of stain or decay in affected wood. This guide will help you identify laminated root rot on freshly cut stumps so they can be distinguished in timber sales requiring marking.

It is important to mark infected stumps so that they can be located following site preparation (burning). When the site is replanted, tree species which are not susceptible to laminated root rot can be used around infected (marked) stumps.

In infected trees, stain and decay of laminated root rot usually extend upward from the roots several feet into the main bole. At the stump surface, stain usually will be seen as 1 to 2 inch wide crescent-shaped bands in the inner sapwood-outer heartwood area (Figure 1). Sometimes stain will also be found in the center of the heartwood (Figure 2). It will range in shade from a slightly darker color than the surrounding wood (Figure 3), to a dark brown, wet-appearing discoloration (Figure 4). Stumps must be marked soon after tree felling since characteristic stain fades within several days. Stain is the initial stage of wood decay. After several years stained wood will develop into advanced rot. Advanced decay will often be found in the center of stained wood (Figure 5). Advanced decay is characterized by wood separating (delaminating) at the annual growth rings. There are small pits on both sides of the sheets and red-brown fuzzy fungal growth on the surface (Figure 6). In infected older trees, hollows will often form in the butt after years of decay.

**Figure 1.** One to two inch-wide, crescent-shaped bands of stained and/or decayed wood in the inner sapwood/outer heartwood.

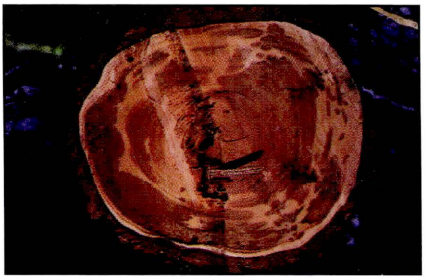

**Figure 2.** Stain and decay in the inner heartwood and the sapwood.

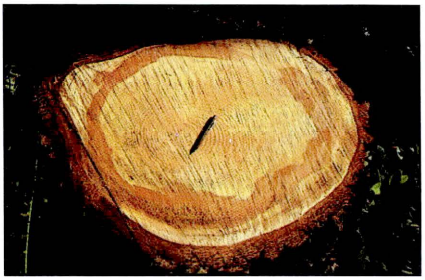

**Figure 3.** Stain appearing as a light shade of discoloration.

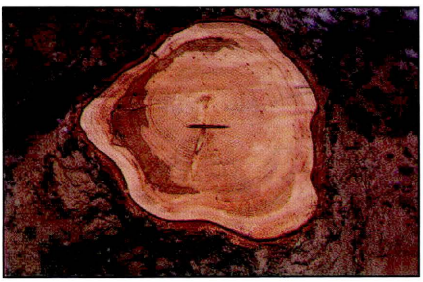

**Figure 4.** Stain appearing as a dark-brown discoloration.

The size of laminated root rot disease centers can vary from one tree to hundreds or thousands of trees. Usually if one stained stump is found, stain will be found also in one or more adjacent stumps.

Other stains or decays may be confused with laminated root rot. Old wounds that heal often leave a zone of stain or decay behind the wound face (Figure 7). Other types of root and butt decay may be confused with laminated root rot. A common example is red-brown butt rot of Douglas-fir (Figure 8). This damage is common in mature-over-mature Douglas-fir. Stumps with this dry-crumbly red-brown decay should not be marked.

To best meet contract specifications, stumps with laminated root rot stain or decay at the cut surface should be marked with a saw within one hour of felling. Stumps should be marked by making two parallel grooves, 2 inches deep and 6 inches apart (Figure 9).

**Figure 5.** Decayed wood surrounded by stain. Decay is laminated; separating at the annual rings.

**Figure 6.** Laminated and pitted decayed wood with red-brown fuzzy fungal growth.

**Figure 7.** This stain and decay is the result of an old wound. It is not laminated root rot. **Do not mark this stump.**

**Figure 8.** Brown cubical decay; the result of another disease. **Do not mark this stump.**

**Figure 9.** Example of marking infected stumps: Two parallel grooves, 2 inches deep, and 6 inches apart.

Copies of this guide can be obtained by contacting:

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